

What is claimed is:

1. A magnetic resonance imaging system comprising:

scanning means for selectively exciting in turn a plurality of regions of an object acquiring echo data from the object while the object is continuously moved; and

processing means for producing image data from the echo data acquired by the scanning means,

wherein the scanning means includes position-moving means for moving the plurality of selectively excited regions according to a movement of the object such that the plurality of regions are selectively excited in sequence region by region within a predetermined imaging range.

2. The magnetic resonance imaging system according to claim 1, wherein the imaging range is determined fixedly in space by the magnetic resonance imaging system.

3. The magnetic resonance imaging system according to claim 1, wherein the scanning means includes a couch with a tabletop on which the object is laid, the couch having a mechanism for moving the tabletop in a longitudinal direction of the tabletop.

4. The magnetic resonance imaging system according to claim 1, wherein the plurality of regions are composed of multi-slices of the object.

5. The magnetic resonance imaging system according to claim 4, wherein a slice-selective axis given to the multi-slices is made to agree with a moving direction of the object.

6. The magnetic resonance imaging system according to claim 4, wherein a slice-selective axis given to the multi-slices is made to be different

from the moving direction of the object.

7. The magnetic resonance imaging system according to claim 4,
wherein the scanning means includes means for adding another slice to a
5 tail of the multi-slices as a slice belonging to the plurality of multi-slices in
the moving direction in cases where a head slice of the multi-slices in the
moving direction goes beyond the imaging range.

8. The magnetic resonance imaging system according to claim 4,
10 wherein the position-moving means is configured to change slice by slice a
carrier frequency of a selective-excitation RF pulse to be applied to the
multi-slices.

9. The magnetic resonance imaging system according to claim 8,
15 wherein the position-moving means is configured to change the carrier
frequency of the selective-excitation RF pulse in compliance with a
geometrical relationship between the moving direction of the object and the
slice selecting direction.

20 10. The magnetic resonance imaging system according to claim 6,
wherein the scanning means has acquisition means for acquiring the echo
data from the selectively excited slices, and

the processing means includes phase correcting means for
correcting a phase of echo data acquired by the acquisition means on the
25 basis of a geometrical relationship between a position of the object and a
direction in which a gradient is applied, and reconstructing means for
reconstructing the echo data of which phases are corrected by the phase
correcting means.

30 11. The magnetic resonance imaging system according to claim 1,

wherein the scanning means includes means for selectively exciting in sequence the plurality of regions by using a preparation pulse whose position applied to the object is moved in response to the movement of the plurality of regions.

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12. The magnetic resonance imaging system according to claim 1, wherein the scanning means includes means for selectively exciting in sequence the plurality of regions by use of a pulse sequence having a gradient pulse to be applied in the moving direction of the object, in which a phase compensation pulse for nulling a gradient moment of a first or second order is added to at least part of the gradient pulse.

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13. The magnetic resonance imaging system according to claim 1, wherein the scanning means includes means for selectively exciting in sequence the plurality of regions by use of a pulse sequence, formed based on a fast spin echo technique, including a gradient that meets, at least partly, a VIPS condition.

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14. A method for magnetic resonance imaging that allows an object to be imaged while the object is moved continuously, comprising the steps of:

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selectively exciting a plurality of regions of the object in sequence region by region within a predetermined imaging range; and

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moving positions of the plurality of regions selectively excited within the imaging range in compliance with a movement of the object.

15. The magnetic resonance imaging method according to claim 14, wherein the imaging range is determined fixedly at a spatial position by a magnetic resonance imaging system.

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16. The magnetic resonance imaging method according to claim 14,
wherein the plurality of regions are composed of multi-slices of the object.

17. The magnetic resonance imaging method according to claim 16,
5 wherein a slice-selective axis given to the multi-slices is made to agree with
the moving direction of the object.

18. The magnetic resonance imaging method according to claim 16,
wherein a slice-selective axis given to the multi-slices is made to be different
10 from the moving direction of the object.

19. The magnetic resonance imaging method according to claim 16,
wherein another slice is added to a tail of the multi-slices as a slice
belonging to the plurality of multi-slices in the moving direction, in cases
15 where a head slice of the multi-slices in the moving direction goes beyond
the imaging range.